



EMC TEST REPORT For FCC

Test Report No. : KES-E1-16T0669-R1
Date of Issue : Feb. 24, 2023
Product name : NETWORK CAMERA
Model/Type No. : XND-6080RV
Variant Model : -
Applicant : Hanwha Vision Co., Ltd
Applicant Address : 6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, Republic of Korea
Manufacturer : 1. HANWHA VISION VIETNAM COMPANY LIMITED
2. D-TECH CO.,LTD.
Manufacturer Address : 1. Lot O-2, Que Vo Industrial Zone extended area,
Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
2. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi- do,
Korea (Suwon Industrial Complex)
Equipment authorization : ☐ Declaration of Conformity
☒ Verification
☐ Certification
Date of Receipt : Nov, 23, 2016
Test date : Dec. 19, 2016 ~ Dec. 21, 2016
Test Results : ☒ In Compliance ☐ Not in Compliance

Tested by

Dae Hyun, Kim
EMC Test Engineer

Reviewed by

Dong-Hun, Jang
EMC Technical Manager

This test report is not related to KS Q ISO/IEC 17025 and KOLAS.

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REPORT REVISION HISTORY

Date	Test Report No.	Revision History
Dec. 22, 2016	KES-E1-16T0669	Issued
Feb. 24, 2023	KES-E1-16T0669-R1	Change the Applicant and manufacturer at the request of the customer

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1.0 General Product Description

Main Specifications of EUT are:

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1.1 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage ☐ 100 Vac ☐ 120 Vac ☐ 24 Vac ☒ 12 Vdc ☒ PoE
Frequency ☐ 50 Hz ☐ 60 Hz ☐ Hz

1.2 Variant Model Differences

Not applicable

1.3 Device Modifications

Not applicable

1.4 Equipment Under Test

Description	Model Number	Serial Number	Manufacturer	Remarks
NETWORK CAMERA	XND-6080RV	-	HANWHA VISION VIETNAM COMPANY LIMITED	E.U.T

1.5 Support Equipments

Description	Model Number	Serial Number	Manufacturer	Remarks
PoE Adapter	ANY4805C-LT1	10H300002	ANY ELECTRONICS CO., LTD	-
Speaker	BR10000A CUVE	-	BEIJING EDIFIER HI-TECH GROUP.	-
Mobile Phone	A1688	-	Apple Inc.	-
Micro SD Card	-	-	-	-
Notebook	ProBook4430s	-	HP	-
Notebook Adapter	SeriesPPP0009H	-	CHICONY POWER TECHNOLOGY (SUZHOU) CO.,LTD,	-
Alarm Jig	-	-	-	-

1.6 External I/O Cabling

- DC 12 V Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	RJ-45(LAN)	Notebook	RJ-45(LAN)	4.0	U
	Audio in	Mobile Phone	Audio Out	1.2	U
	Audio Out	Speaker	Audio in	1.1	U
	Alarm	Alarm Jig	Alarm	3.2	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-

- PoE Mode

Start		END		Cable Spec.	
Description	I/O Port	Description	I/O Port	Length	Shield
NETWORK CAMERA (E.U.T)	Audio in	Mobile Phone	Audio Out	1.2	U
	Audio Out	Speaker	Audio in	1.1	U
	Alarm	Alarm Jig	Alarm	3.2	U
	Micro SD Card Slot	Micro SD Card	Micro SD Card Slot	-	-
	RJ-45(PoE)	PoE Adapter	RJ-45(PoE)	4.0	U
PoE Adapter	RJ-45(LAN)	Notebook	RJ-45(LAN)	1.9	U

* Unshielded = U, Shielded = S

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1.7 EUT Operating Mode(s)

Test mode	Normal operating
DC 12 V	E.U.T Monitoring , Ping test
PoE	

E.U.T Test operating S/W		
Name	Version	Manufacture Company
WebViewer	-	Hanwha Vision Co., Ltd

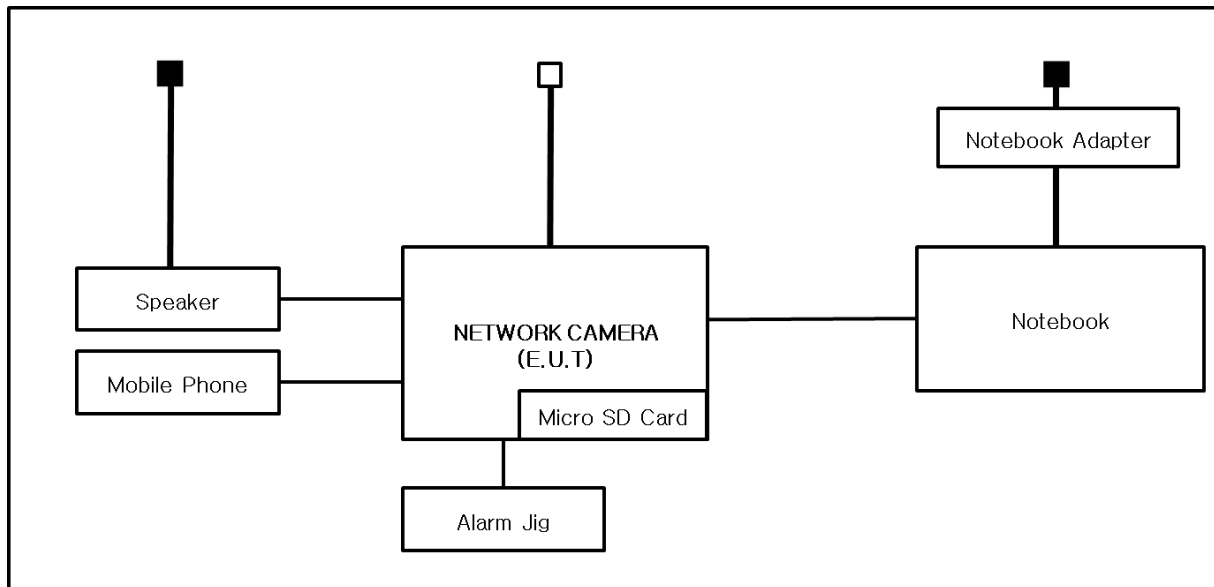
- Input power condition during the measurements was 12 v (dc) , PoE.

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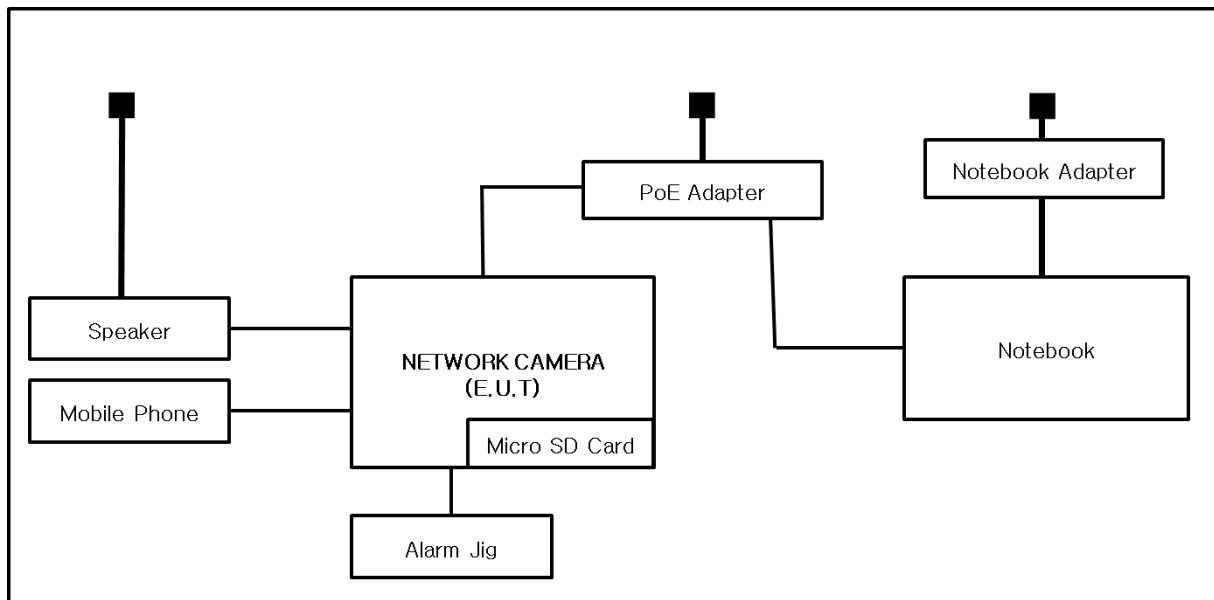
1.8 Configuration

■ AC Main
 □ DC Main

- DC 12 V Mode



- PoE Mode



1.9 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

1.10 Test Facility

The measurement facility is located at 473-21, Gayeo-ro, Yeosu-si, Gyeonggi-do, 12658, Korea, Republic of. The sites are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-4:2019

1.11 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
KOREA	RRA	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KR0100
International	KOLAS	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 KT489
USA	FCC	3 m & 10 m Semi-Anechoic Chamber Conducted test site to perform FCC Part 15/18 measurements.	 KR0100
Canada	ISED	3 m & 10 m Semi-Anechoic Chamber and Conducted test site	 23298
JAPAN	VCCI	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site)	 C-20136, T-20137, R-20181, G-20176
Europe	TÜV SÜD	EMI (3 m & 10 m Semi-Anechoic Chamber and conducted test site) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions)	 CARAT 001633 0004

2.0 Test Regulations

The emissions tests were performed according to following regulations:

☐ **EMC – Directive 2014/30/EU**

☐ EN 61000-6-3:2011

☐ EN 61000-6-1:2007

☐ EN 61000-6-4:2007 +A1:2011

☐ EN 61000-6-2:2005

☐ EN 55011:2007 +A1:2010

☐ Group 1
☐ Class A

☐ Group 2
☐ Class B

☐ EN 55014-1:2006 +A2:2011

☐ EN 55014-2:1997 +A2:2008

☐ EN 55015:2013

☐ EN 55022:2010

☐ Class A

☐ Class B

☐ EN 55024:2010

☐ EN 50130-4:2011 +A1:2014

☐ EN 61000-3-2:2014

☐ EN 61000-3-3:2013

☐ EN 61326-1:2013



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- | | | |
|--|---|----------------------------------|
| ☐ VCCI V-3 / 2015.04 | ☐ Class A | ☐ Class B |
| ☐ AS/NZS CISPR22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☒ 47 CFR Part 15, Subpart B | | |
| ☐ CISPR 22:2009 +A1:2010 | ☐ Class A | ☐ Class B |
| ☒ ANSI C63.4-2014 | ☒ Class A | ☐ Class B |
| ☐ IC Regulation ICES-003 : 2016 | | |
| ☐ CAN/CSA CISPR 22-10 | ☐ Class A | ☐ Class B |
| ☐ ANSI C63.4-2014 | | |
| ☐ MEDICAL – Directive 93/42/EEC | | |
| ☐ EN 60601-1-2 :2007 | | |
| ☐ RE– Directive 2014/53/EU | | |
| ☐ EN 301 489-1 V1.9.2 | | |
| ☐ Equipment for fixed use | | |
| ☐ Equipment for vehicular use | | |
| ☐ Equipment for portable use | | |
| ☐ EN 301 489-3 V1.6.1 | | |
| ☐ EN 301 489-17 V2.2.1 | | |
| ☐ EN 60945:2002 | | |

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2.1 Conducted Emissions at Mains Power Ports

Test Date

N/A

Test Location

Electro wave Shieldroom

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☐	EMI Test Receiver	ESR3	R & S	101783	05, 03, 2017
☐	LISN	ENV216	R & S	101137	02, 04, 2017
☐	LISN	ENV216	R & S	101786	05, 02, 2017
☐	Electro wave Shieldroom	-	SEMITEC	-	-
☐	EMI Test S/W	EMC32	R & S	9.12.00	-

Test Conditions

Temperature: °C
Relative Humidity: %

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

- ☐ PASS
☐ NOT PASS
☒ NOT APPLICABLE

Remarks

DC 12 V, PoE Mode N/A :

E.U.T power is 12 v (dc) power and PoE, limits are not specified

2.2 Radiated Electric Field Emissions(Below 1 GHz)

Test Date

Dec, 19, 2016

Test Location

☐ Open Area Test Site #1 ☒ Open Area Test Site #2

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	EMI TEST Receiver	ESU26	R&S	100551	04, 18, 2017
☒	Trilog-Broadband ANT	VULB 9163	Schwarzbeck	9163-715	04, 14, 2018
☒	OATS	-	KES	-	-
☒	Antenna Mast	1070/1080	EMCO	-	-
☒	Turn Table	-	DAEIL EMC	-	-
☒	EMI Test S/W	-	-	-	-

Test Conditions

Temperature: 3,6 °C
Relative Humidity: 61,0 %

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

The requirements are:

☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.

2.3 Radiated Electric Field Emissions(Above 1 GHz)

Test Date

Dec, 21, 2016

Test Location

Semi Anechoic Chamber #1

Test Equipment

Used	Description	Model Number	Manufacturer	Serial Number	Cal. Due
☒	Log-Periodic Antenna	STLP 9149	SCHWARZBECK	9149-255	05, 17, 2018
☒	EMI TEST Receiver	ESU26	R&S	100551	04, 18, 2017
☒	Preamplifier	EMI TEST Receiver	R&S	102232	06, 29, 2017
☒	Semi Anechoic Chamber #1	-	KES	-	-
☒	Tilt Antenna Mast	TAM 4.0-E	maturro	18100116	-
☒	Turn Table	DT 2000-1,5T	INN-CO	-	-
☒	EMI Test S/W	-	-	-	-

Test Conditions

Temperature: 21,3 °C

Relative Humidity: 54,3 %

Frequency Range of Measurement

1 GHz to 5 GHz

Instrument Settings

IF Band Width: 1 MHz

Test Results

The requirements are:

- ☒ PASS
☐ NOT PASS
☐ NOT APPLICABLE

Remarks

See Appendix A for test data.



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APPENDIX A – TEST DATA

Conducted Emissions at Mains Power Ports

[HOT]

N/A

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (LISN FACTOR+ Cable Loss)



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[NEUTRAL]

N/A

◆ Calculation

QuasiPeak[dBuV] / CAverage [dBuV] = Reading Value[dBuV] + Corr. [dB]

QuasiPeak / CAverage : The Final Value

Reading Value : Not shown in the table.

Corr. : Correction values (LISN FACTOR+ Cable Loss)

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Radiated Electric Field Emissions(Below 1 GHz)

- DC 12 V Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dBμV]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dBμV/m]	[dBμV/m]	[dB]
186.00	11.13	V	1.00	10.06	2.84	24.03	43.50	19.47
425.53	12.56	H	3.90	16.01	4.66	33.23	46.40	13.17
475.12	9.13	V	1.00	16.87	4.95	30.95	46.40	15.45
552.63	15.42	V	1.00	18.34	5.26	39.02	46.40	7.38
600.02	7.19	H	3.50	19.27	5.59	32.05	46.40	14.35
603.11	12.50	V	2.00	19.28	5.62	37.40	46.40	9.00

* H : Horizontal, V : Vertical

◆ Calculation

Corrected Amplitude [dBuV] = Amplitude[dBuV] + Correction Factor [dB]

Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

- PoE Mode

Frequency	Amplitude	ANT	ANT. Height	Correction Factor		Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dBμV]	Polar. (H/V)	[m]	ANT. [dB/m]	Cable [dB]	[dBμV/m]	[dBμV/m]	[dB]
52.07	18.22	V	1.00	13.64	1.40	33.26	39.00	5.74
79.13	22.24	H	4.00	7.12	1.76	31.12	39.00	7.88
186.12	16.59	H	4.00	10.07	2.84	29.50	43.50	14.00
300.24	15.42	H	4.00	13.41	3.61	32.44	46.40	13.96
460.51	11.63	H	3.40	16.62	4.89	33.14	46.40	13.26
528.43	7.38	V	1.90	17.86	5.16	30.40	46.40	16.00

* H : Horizontal, V : Vertical

◆ Calculation

Corrected Amplitude [dBuV] = Amplitude[dBuV] + Correction Factor [dB]

Corrected Amplitude : The Final Value, Amplitude : Reading Value,

Correction Factor : ANT FACTOR + Cable loss

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Radiated Electric Field Emissions(Above 1 GHz)

- DC 12 V Mode

- PK

Frequency	Amplitude	ANT Polar.	ANT. Height	Correction Factor			Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	(H/V)	[m]	ANT. [dB /m]	Cable [dB]	AMP [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
1 000.000	63.230	V	1.000	20.490	3.110	43.640	43.190	80.000	36.810
1 240.000	58.010	V	1.000	21.720	3.430	43.640	39.520	80.000	40.480
1 713.000	67.980	H	1.000	24.130	4.110	43.690	52.530	80.000	27.470
1 929.000	60.320	V	1.000	25.240	4.360	43.760	46.160	80.000	33.840
2 001.000	65.990	H	1.000	25.600	4.400	43.780	52.210	80.000	27.790
2 001.000	29.800	V	1.000	25.600	4.400	43.780	16.020	80.000	63.980
2 594.000	67.450	H	1.000	28.090	5.190	44.050	56.680	80.000	23.320
2 802.000	57.110	H	1.000	28.960	5.270	44.120	47.220	80.000	32.780

- AV

Frequency	Amplitude	ANT Polar.	ANT. Height	Correction Factor			Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dB μ V]	(H/V)	[m]	ANT. [dB /m]	Cable [dB]	AMP [dB]	[dB μ V/m]	[dB μ V/m]	[dB]
1 136.000	45.040	V	1.000	21.180	3.290	43.640	25.870	60.000	34.130
1 240.000	43.190	V	1.000	21.720	3.430	43.640	24.700	60.000	35.300
1 929.000	48.090	V	1.000	25.240	4.360	43.760	33.930	60.000	26.070
2 049.000	51.550	V	1.000	25.810	4.500	43.800	38.060	60.000	21.940
2 057.000	52.110	H	1.000	25.840	4.510	43.810	38.650	60.000	21.350
2 594.000	43.860	H	1.000	28.090	5.190	44.050	33.090	60.000	26.910
2 738.000	43.580	H	1.000	28.690	5.250	44.100	33.420	60.000	26.580
2 802.000	41.020	V	1.000	28.960	5.270	44.120	31.130	60.000	28.870
3 203.000	42.190	H	1.000	30.110	5.680	44.220	33.760	60.000	26.240

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



- PoE Mode

- PK

Frequency	Amplitude	ANT Polar.	ANT. Height	Correction Factor			Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dBμV]	(H/V)	[m]	ANT. [dB/m]	Cable [dB]	AMP [dB]	[dBμV/m]	[dBμV/m]	[dB]
1 000.000	60.270	V	1.000	20.490	3.110	43.640	40.230	80.000	39.770
2 001.000	62.000	H	1.000	25.600	4.400	43.780	48.220	80.000	31.780
2 001.000	54.980	V	1.000	25.600	4.400	43.780	41.200	80.000	38.800
2 057.000	56.570	V	1.000	25.840	4.510	43.810	43.110	80.000	36.890
2 161.000	59.630	H	1.000	26.270	4.710	43.850	46.760	80.000	33.240
2 290.000	52.650	V	1.000	26.820	4.840	43.910	40.400	80.000	39.600
2 594.000	57.780	H	1.000	28.090	5.190	44.050	47.010	80.000	32.990
2 594.000	55.040	V	1.000	28.090	5.190	44.050	44.270	80.000	35.730
2 802.000	54.170	H	1.000	28.960	5.270	44.120	44.280	80.000	35.720
3 195.000	52.640	H	1.000	30.100	5.670	44.220	44.190	80.000	35.810

- AV

Frequency	Amplitude	ANT Polar.	ANT. Height	Correction Factor			Corrected Amplitude	Applicable Limit	Margin
[MHz]	[dBμV]	(H/V)	[m]	ANT. [dB/m]	Cable [dB]	AMP [dB]	[dBμV/m]	[dBμV/m]	[dB]
1 000.000	46.620	V	1.000	20.490	3.110	43.640	26.580	60.000	33.420
1 136.000	45.650	V	1.000	21.180	3.290	43.640	26.480	60.000	33.520
1 240.000	47.200	H	1.000	21.720	3.430	43.640	28.710	60.000	31.290
1 240.000	43.330	V	1.000	21.720	3.430	43.640	24.840	60.000	35.160
2 057.000	52.810	H	1.000	25.840	4.510	43.810	39.350	60.000	20.650
2 057.000	42.210	V	1.000	25.840	4.510	43.810	28.750	60.000	31.250
2 594.000	42.400	H	1.000	28.090	5.190	44.050	31.630	60.000	28.370
2 594.000	41.190	V	1.000	28.090	5.190	44.050	30.420	60.000	29.580
2 746.000	45.050	H	1.000	28.730	5.250	44.100	34.930	60.000	25.070
3 203.000	39.900	H	1.000	30.110	5.680	44.220	31.470	60.000	28.530

◆ Calculation

Over Limit [dB] = (Read Level[dBuV] + Ant Factor[dB/m] + Cable Loss [dB] - Preamp Factor [dB]) - Limit Line[dBuV]

Over Limit : Margin Value, Read Level : Reading Value, Ant Factor : Ant Factor,
Cable Loss : Cable loss, Preamp Factor : Preamp Factor



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Report No.:

KES-E1-16T0669-R1

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Test Setup Photos and Configuration

Conducted Voltage Emissions

N/A

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Radiated Electric Field Emissions(Below 1 GHz)

- DC 12 V Mode



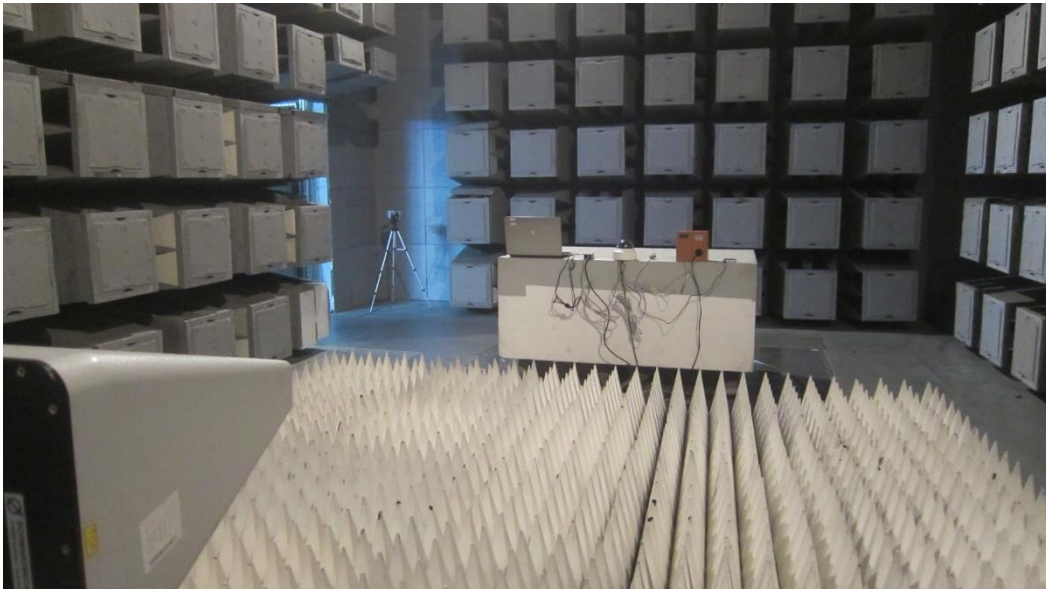
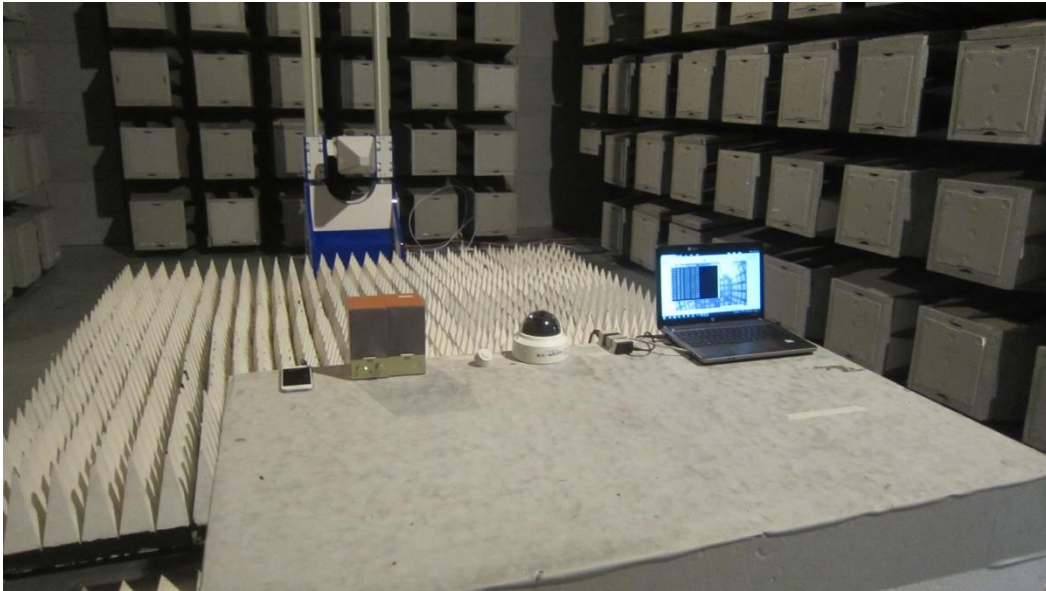
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- PoE Mode



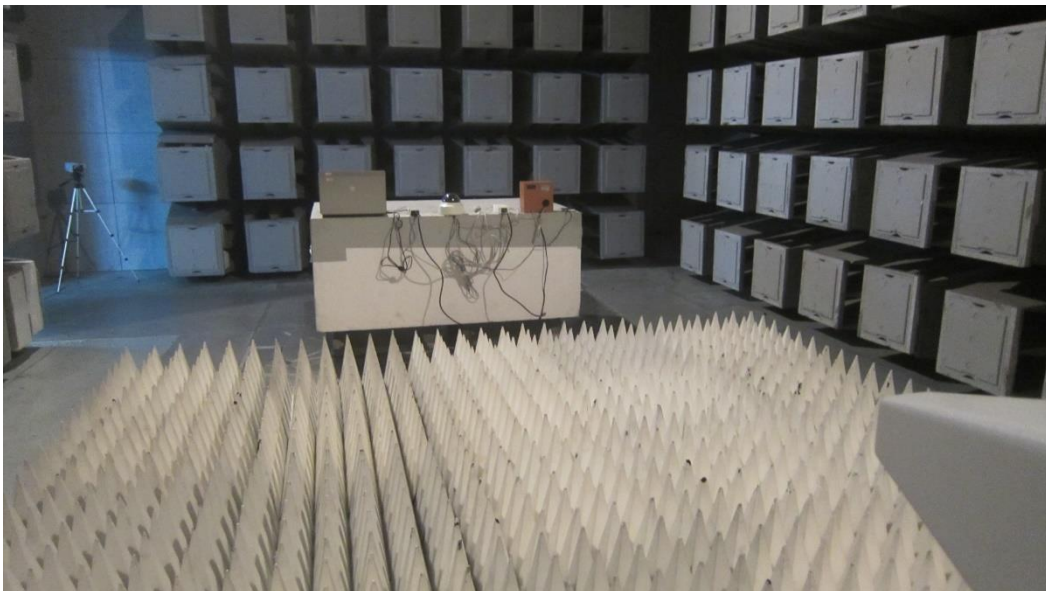
Radiated Electric Field Emissions(Above 1 GHz)

- DC 12 V Mode



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- PoE Mode



EUT External Photographs

(Top)



(Bottom)



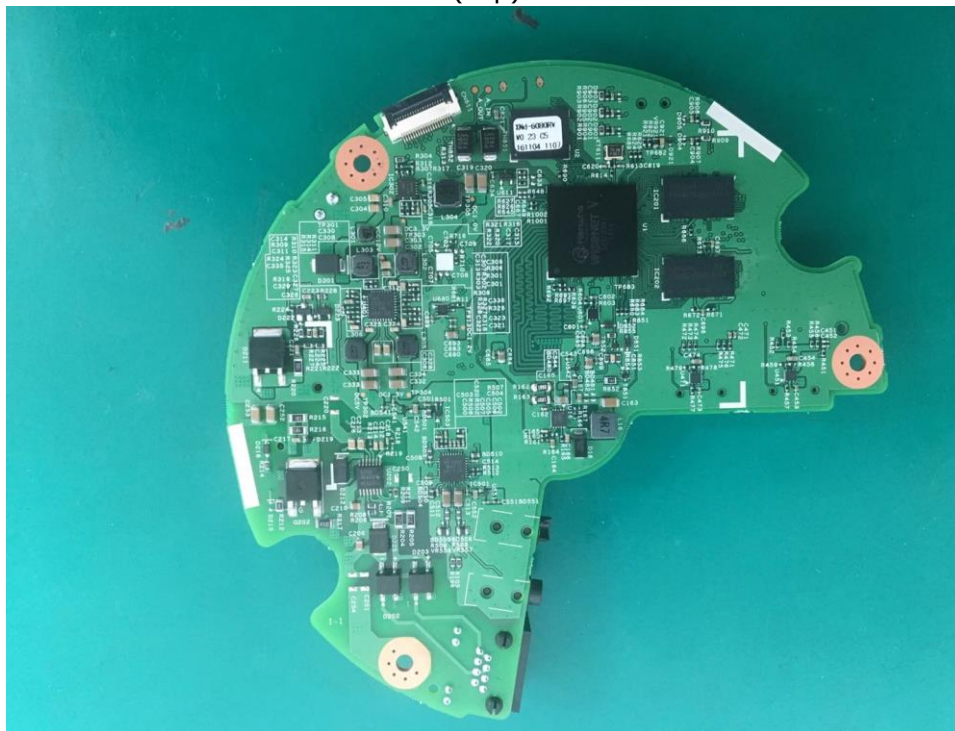
EUT Internal Photographs

(Internal View)

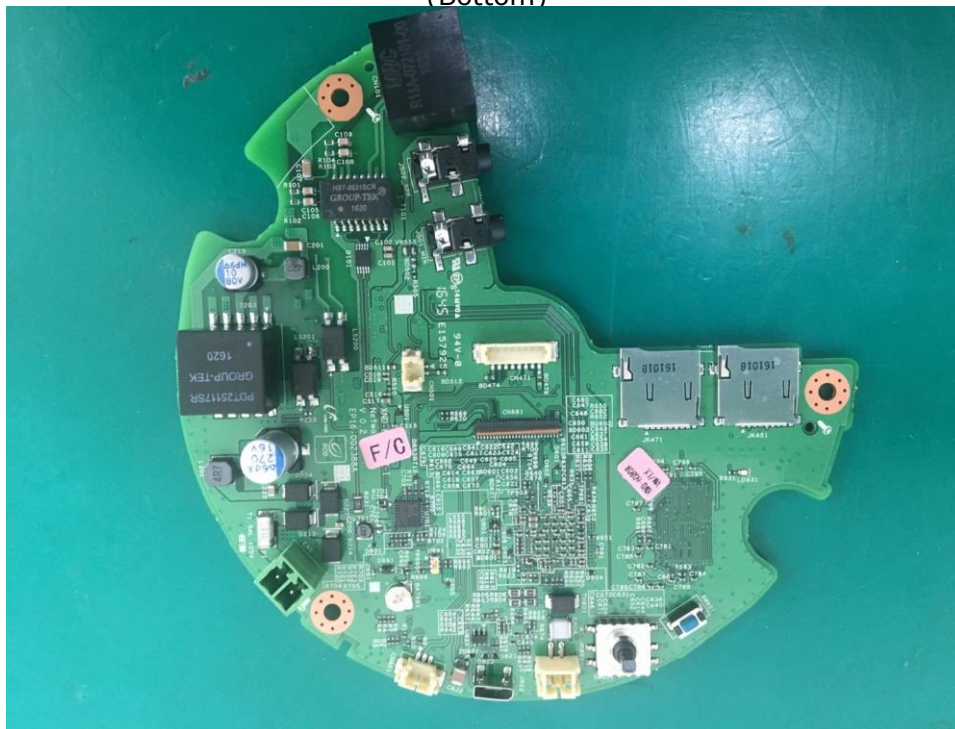


EUT Internal View – Main board

(Top)



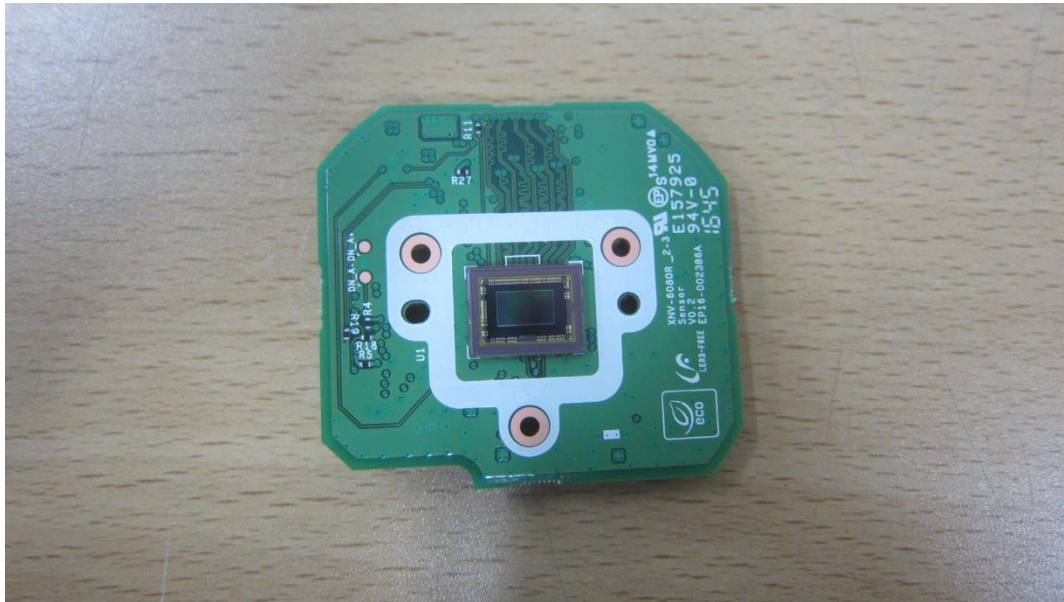
(Bottom)



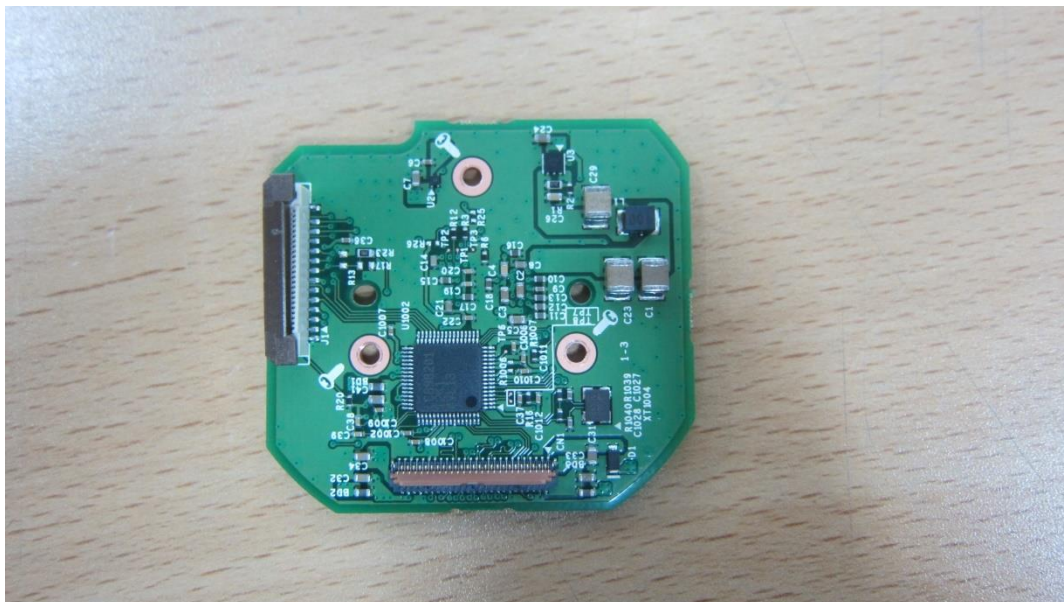
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EUT Internal View – Sub board

(Top)



(Bottom)



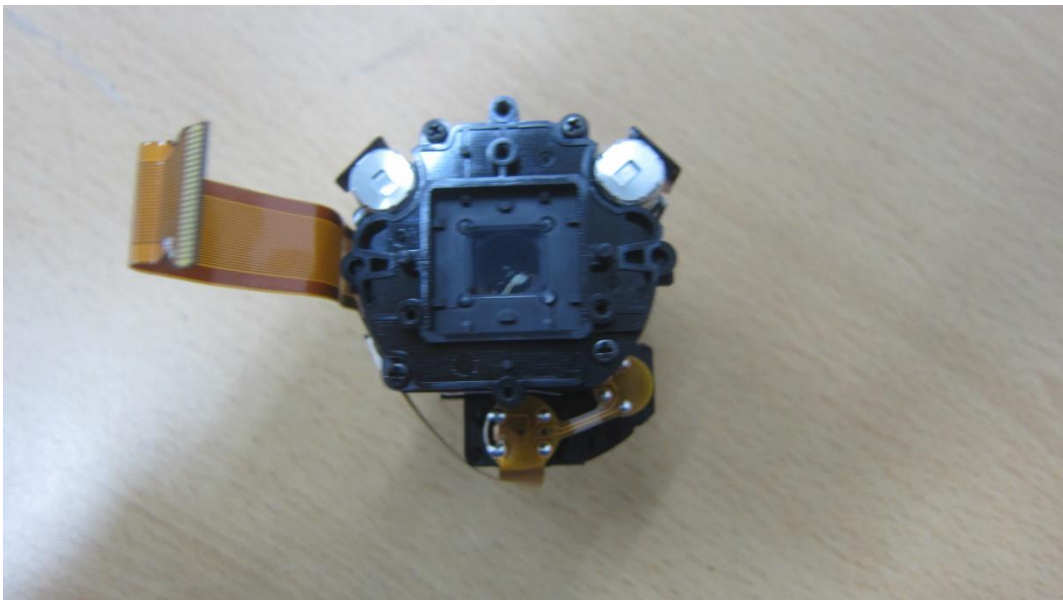
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EUT Internal View – Lens

(Top)



(Bottom)



EUT Internal View – IR Board

(Top)



(Bottom)



Label Photographs



This device complies with part 15 of the FCC Rules. Operation in subject to the following two conditions: (1) This device Sep not cause harmful interference, and (2) this device must accept any interference received, including interference that Sep cause undesired operation.